BEFORE

THE PUBLIC SERVICE COMMISSION OF

SOUTH CAROLINA

DOCKET NO. 281-S

IN RE:	)
	)
Application of Palmetto Utilities, Inc.	)
for adjustment of rates and	)
charges for, and modification to certain	)
terms and conditions related to the	)
provision of	)
sewer service.	)
_____	)

PREFILED REBUTTAL TESTIMONY OF HAROLD WALKER ON BEHALF OF PALMETTO UTILITIES, INC.

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REBUTTAL TESTIMONY
OF
HAROLD WALKER, III
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INTRODUCTION AND PURPOSE

Q. ARE YOU THE SAME HAROLD WALKER, III, WHO PREVIOUSLY SUBMITTED DIRECT TESTIMONY IN THIS PROCEEDING?

A. Yes.

Q. WHAT IS THE PURPOSE OF YOUR REBUTTAL TESTIMONY AT THIS TIME?

A. The purpose of my Rebuttal Testimony is to respond on behalf of Palmetto Utilities, Inc. ("PUI") to the direct testimonies submitted on behalf of the South Carolina Office of Regulatory Staff ("Staff") and by South Carolina Department of Consumer Affairs ("DCA"). Specifically, I am responding to the direct testimonies of Staff witness Charles E. Loy and DCA witness Aaron L. Rothschild concerning customer contribution in aid of construction ("CIAC") related to wastewater assets owned and operated by the City of Columbia, South Carolina ("City") which were acquired in 2013 by PUI's predecessor in interest, Palmetto of Richland County, LLC ("PRC") . Additionally, I am also responding to the direct testimonies of Mr. Parcell and Mr. Rothschild concerning capital structure, common equity cost rate and overall rate of return for Palmetto Utilities, Inc. ("PUI" or the "Company").

SUMMARY

Q. WHAT AREAS OF MR. PARCELL'S AND MR. ROTHSCHILD'S TESTIMONIES DO YOU ADDRESS IN YOUR REBUTTAL TESTIMONY?

A. My testimony addresses Mr. Parcell's and Mr. Rothschild's recommended:

- Contributions in Aid of Construction related to the former City assets;
- Capital structure ratios for PUI;
- Risk factors;

- Application of the Discounted Cash Flow Model ("DCF"), Capital Asset Pricing Model ("CAPM") and Comparable Earnings; and
- Common equity cost rate applicable to PUI.

My testimony also addresses Mr. Parcell's and Mr. Rothschild's comments on my prepared direct testimony. I respectfully disagree with Mr. Parcell's and Mr. Rothschild's proposed returns on equity of 9.55% and 8.63%, respectively, or their resultant proposed overall rates of return of 7.90% and 7.33%, respectively, and I do not believe the Public Service Commission of South Carolina ("Commission" or "PSC") should accept Mr. Parcell's or Mr. Rothschild's proposals.

Based upon the results of my entire analysis contained in my direct testimony, my recommendation is that the PUI be permitted an overall rate of return of 8.57% including a recommended common equity cost rate of 10.50%. As a check on the reasonableness of my common equity cost rate recommendation, I reviewed Value Line's projected returns on common equity for comparable utilities which range from 9.5% to 14.0%. The range of the projected returns suggests that my recommendation that PUI be permitted an opportunity to earn on common equity of 10.50% is reasonable, if not conservative.

CUSTOMER CONTRIBUTION IN AID OF CONSTRUCTION

Q. MR. LOY CLAIMS TO HAVE EVIDENCE FROM THE CITY THAT SUPPORTS THAT MUCH OF THE PLANT WAS DONATED, ASSERTING ON PAGE 15, THAT, "CRITICALLY, THE SUBDIVISION LIST SHOWS THE MONTH OF CONTRIBUTION, AND THE EARLIEST DATE SHOWN IS JULY 2005. THAT MEANS THAT THE CITY DID NOT START RECORDING CONTRIBUTED

CAPITAL SPECIFICALLY UNTIL THAT POINT." DO YOU AGREE WITH MR. LOY?

A. No. Of course, the City never records contributions in aid of construction as that term is defined in the National Association of Regulatory Commissioners' Uniform System of Accounts ("USOA") because the City is not subject to that requirement. Regardless, the City's financial statements and bond offerings pre-2005 show they were recording contributions long before 2005. Since it is provable the City was recording contributions pre-2005, I cannot agree with Mr. Loy's conclusion.[1]

Q. ON PAGE 16 MR. LOY STATES THAT "THE CITY RECORDED A $13.4 MILLION GAIN ON THE TRANSACTION. THE ONLY WAY THE CITY WAS ABLE TO RECORD SUCH A LARGE GAIN FOR THE TRANSACTION IS DUE TO THE SIGNIFICANT AMOUNTS OF DONATED PLANT." DO YOU AGREE WITH MR. LOY'S STATEMENT?

A. No. I cannot say definitely why a $13.4 million gain was recorded by the City because I do not work there. However, if Mr. Loy's contention is correct, it would mean the City, its auditor, and/or its financial advisors have been under reporting net income and the utility plant on their balance sheet by $13.4 million on their audited financial statements and bond offering materials. Since such a proposition suggests illegality by the City and its advisors, I cannot agree with Mr. Loy's conclusion.

Q. ON PAGE 9 OF MR. ROTHSCHILD'S TESTIMONY ON ACCOUNTING, HE STATES, "WHEN AN INVESTOR OWNED UTILITY ("IOU") PURCHASES A

[1] See HW Rebuttal Exhibit 1, attached to this testimony, for a sample of a pre-2005 City financial statement.

MUNICIPALITY, THERE IS AN INCENTIVE FOR COLLUSION BECAUSE BOTH SIDES STAND TO BENEFIT FROM A HIGHER PURCHASE PRICE – ALL AT THE EXPENSE OF THE CONSUMER. THE HIGHER THE PRICE, THE BIGGER THE CHECK RECEIVED BY THE MUNICIPALITY. THE HIGHER THE PRICE, THE GREATER THE IOU'S RATE BASE." DO YOU AGREE WITH MR. ROTHSCHILD?

A. No, collusion suggests illegality on the part of parties involved in a transaction. There has been no evidence of any "collusion" between the City and PUI. Further, there is no economic incentive for a regulated buyer to pay more than is necessary to win a bid to purchase assets because a regulated buyer is only entitled to the opportunity to earn a fair rate of return on their investment as determined by the regulator. That is, a regulated buyer's opportunity to earn a fair rate of return does not change based on the amount of a purchase price. In fact, I believe PUI would have gladly purchased the City's assets for $1.00 if they had the opportunity. An investor has no incentive to pay more for their investment than the minimum required to win the bid to purchase assets unless they can earn more than a fair rate of return. Accordingly, I do not agree with Mr. Rothschild.

Q. MR. ROTHSCHILD'S TESTIMONY ON ACCOUNTING DISCUSSES CIAC RELATED TO THE ASSETS PURCHASED FROM THE CITY. DOES MR. ROTHSCHILD PRESENT ANY ANALYSIS OF CIAC IN HIS TESTIMONY?

A. No, his testimony regarding CIAC is based entirely on Mr. Loy's report prepared on behalf of the Staff or quotes from testimony prepared on behalf of the Company.

Q. DO YOU HAVE ANY COMMENTS REGARDING PAGE 17 OF MR. ROTHSCHILD'S TESTIMONY ON ACCOUNTING, WHERE HE SUMMARIZES HIS RECOMMENDATION AND STATES, "$1.29 MILLION OF THE $18 MILLION ACQUISITION PRICE BE ALLOWED TO GO INTO RATE BASE"?

A. Yes. First, Mr. Rothschild's recommendation would effectively result in the Company having to write-off ($18 million - $1.29 million) $16.71 million, or 93%, of their investment related to the purchase of the City's assets. I believe if such a recommendation were to be adopted by the Commission it would effectively end or eliminate all future purchases of municipal utilities by investor owned utilities in the State because I cannot envision a scenario where an investor would be willing to forgo 93% of their investment.

Second, Mr. Rothschild submitted testimony on the Company's common equity cost rate in the current proceeding which is entirely void of any mention of the fact that he is simultaneously recommending effectively disallowing 93% of the Company's investment related to the purchase of the City's assets. Mr. Rothschild's cost of common equity recommendation does not reflect nor consider the possible write-off of 93% of the Company's investment related to the purchase of the City's assets. A write-off of 93% of the Company's investment related to the purchase of the City's assets requires a cost of common equity that is several times higher than that which is recommended by Mr. Rothschild and without doing so would result in a clear taking of property.

A FAIR RATE OF RETURN

Q. DO THE RECOMMENDATIONS OF MR. PARCELL AND MR. ROTHSCHILD PROVIDE THE COMPANY WITH THE OPPORTUNITY TO EARN A FAIR RATE OF RETURN?

A. No. In *Bluefield*[2], a fair rate of return is defined as: (1) equal to the return on investments in other business undertakings with the same level of risks (the comparable earnings standard); (2) sufficient to assure confidence in the financial soundness of a utility (the financial integrity standard);, and (3) will maintain and support its credit, enabling the utility to raise or attract additional capital necessary to provide reliable service (the capital attraction standard).

Mr. Parcell's and Mr. Rothschild's rate of return recommendations are not appropriate and do not produce a fair rate of return for PUI. Throughout this rebuttal testimony I highlight the numerous defects contained in their testimonies and recommendations. Their recommendations do not comport with the precepts of a fair rate of return, including the comparable earnings standard; capital attraction standard, and the financial integrity standard. For example, Mr. Parcell's testimony offers the theory that Ni Pacolet Milliken Utilities, LLC's indirect ownership of PUI reduces the risk of PUI providing wastewater service to customers.[3] I do not believe it is reasonable that PUI should be afforded something less than a fair rate of return because they are indirectly owned by a larger company such as Ni Pacolet Milliken Utilities, LLC.

[2] *Bluefield Water Works & Improvement Company v. P.S.C. of West Virginia*, 262 U.S. 679 (1923).

[3] Ni South Carolina Utilities Inc. is the direct parent of PUI and Ni South Carolina Utilities Inc. is owned by Ni Pacolet Milliken Utilities, LLC.

Mr. Parcell's and Mr. Rothschild's recommendations violate the precepts of a fair rate of return, including the comparable earnings standard, the capital attraction standard, and the financial integrity standard. PUI is entitled to a return that will enable it to attract additional capital, not only capital provided by Ni Pacolet Milliken Utilities, LLC. The credit that enables Ni Pacolet Milliken Utilities, LLC's debt to be issued is that of the issuing entity, Ni Pacolet Milliken Utilities, LLC. A fair rate of return for PUI is the credit that should enable the PUI to attract capital regardless of Ni Pacolet Milliken Utilities, LLC. The risk of PUI providing service to customers is not mitigated simply because Ni Pacolet Milliken Utilities, LLC provides capital or because Ni Pacolet Milliken Utilities, LLC owns other utilities. Risk does not change with ownership, and the price or cost of bearing risk is what it is. Mr. Parcell's and Mr. Rothschild's recommendations offer no incentive to investors to invest in PUI wastewater assets when higher returns are available from other less risky wastewater assets. Investors will not provide capital and should not be forced to provide capital when higher risk-adjusted returns are available.

CAPITAL STRUCTURE

Q. WHAT CAPITAL STRUCTURE RATIOS DO MR. PARCELL AND MR. ROTHSCHILD RECOMMEND BEING USED TO DEVELOP PUI'S OVERALL RATE OF RETURN?

A. Mr. Parcell recommends the use of a hypothetical capital structure consisting of 45% long-term debt and 55% equity for the PUI. Mr. Parcell states his recommended hypothetical capital structure is based on the capital structure of his proxy group however, his proxy

group had an average capital structure of 45.4% debt and 54.6% equity and a median capital structure of 42.5% debt and 57.5% equity in 2018 (see Exhibit DCP-2 Schedule 4).[4]

Mr. Rothschild recommends a capital structure consisting of 47.5% debt and 52.5% equity based upon the average capital structure for his comparison group. Mr. Rothschild's average capital structure includes short-term debt (Schedule ALR 6, page 4) and is therefore, based on incorrect information. It is not appropriate to include short-term debt in ratemaking capital structure. Short-term debt is used primarily for interim funding of capital projects, or construction work in progress ("CWIP"). After the CWIP related projects are completed, the short-term debt is replaced by permanent debt or by equity infusion. The Company's CWIP is not part of their rate base claim. Accordingly, since short-term debt is a temporary source of financing for the non-rate base component CWIP, its inclusion in the capital structure is not appropriate. Based on the aforesaid, I believe the Commission should reject Mr. Rothschild's recommendation.

PUI's actual capital structure, 41.8% debt and 58.2% equity, is within the range of Mr. Parcell's and Mr. Rothschild's proxy groups' capital structure ratios.[5] Given the small size of PUI and the related greater risk, they should employ an equity ratio that is higher than the proxy group to offset their risk difference. Mr. Parcell and Mr. Rothschild did not present any evidence proving PUI's actual capital structure is unreasonable.

[4] The common equity ratio for Mr. Parcell's proxy group is projected to increase during the 2022-2024 period according to the information shown on Mr. Parcell's Schedule 4.

[5] Three companies in Mr. Parcell's proxy group had a common equity ratio of 58% or more in 2018. Three companies in his proxy group are projected to have a common equity ratio of over 60% or more during the 2022-2024 period according to the information shown on Mr. Parcell's Schedule 4.

Further, I believe if PUI's actual 58.2% common equity ratio was converted to a 55% common equity ratio, as recommended by Mr. Parcell, or 52% common equity ratio, as recommended by Mr. Rothschild, without just compensation in the form of a much higher return on equity, it may also be a taking of PUI's property.

Q. DID MR. PARCELL OR MR. ROTHSCHILD RECOMMEND A FINANCIAL RISK ADJUSTMENT TO ACCOUNT FOR THE DIFFERENCE IN THE COMMON EQUITY RATIO OF THEIR PROXY GROUPS AND THE COMMON EQUITY RATIO THEY RECOMMENDS FOR PUI?

A. No, they did not account for the difference, or higher risk, of the common equity ratio they recommend for PUI versus the common equity ratio employed by their proxy groups. As discussed in my direct testimony, PUI is a small company and they are much smaller than their proxy groups. The size of a company affects risk. A smaller company requires the employment of proportionately less financial leverage (i.e., debt and preferred capital) than a larger company to balance out investment risk. If investment risk is not balanced out, then a higher cost of capital is required.

DEBT COST RATE

Q. DO MR. PARCELL AND MR. ROTHSCHILD AGREE WITH YOUR RECOMMENDED 5.89% DEBT COST RATE?

A. Yes, both Mr. Parcell And Mr. Rothschild agree with the cost of debt presented in my direct testimony of 5.89% for PUI.

PROXY GROUP

Q. ON PAGE 24 MR. PARCELL STATES THAT YOUR PROXY GROUP INCLUDES TWO COMPANIES THAT DO NOT MEET YOUR SELECTION CRITERIA AS STATED IN YOU DIRECT TESTIMONY. IS HE CORRECT?

A. No. Mr. Parcell cites Aqua America and SJW Group as not meeting my criteria. However, my criteria for selection included the phase, "are not the announced **subject of an acquisition**." Neither Aqua America nor SJW Group are the target of an acquisition. Both of these entities are acquiring other entities, as are many of the proxy group companies utilized by Mr. Parcell.

In mid-March 2018 Connecticut Water Service and SJW announced a planned merger with Connecticut Water being acquired by SJW. Similarly, in 2018 Aqua America announced that it was buying a natural gas utility, Peoples Natural Gas. If merger or acquisitions were a justifiable reason for eliminating a company from inclusion in a proxy group then most, if not all, water utility stocks would be eliminated since they are regularly acquiring other water and wastewater utility systems.

Q. WHAT PROXY GROUPS DO MR. PARCELL AND MR. ROTHSCHILD USE?

A. Mr. Rothschild's proxy group contains the same companies that are included in my group. Mr. Parcell's proxy group is a subset of the comparison group that I used. Specifically, Mr. Parcell excluded Aqua America and SJW Corp.

Q. DO YOU HAVE ANY OTHER COMMENTS REGARDING MR. PARCELL'S OR MR. ROTHSCHILD'S PROXY GROUPS?

A. Yes. In addition to using a comparison group or proxy group to estimate the cost of equity, proxy groups are used as a benchmark to satisfy the long-established guideline of providing a utility the opportunity to earn a return equal to that of similar risk enterprises. However, neither Mr. Parcell nor Mr. Rothschild presented any evidence regarding the similarity, or dissimilarity, of risk between their comparison companies and PUI. A risk analysis of PUI and my proxy group companies is discussed in my direct testimony in the sections "Financial Analysis" and "Risk Analysis." A risk analysis of PUI and proxy group companies is essential in determining a fair rate of return because risk and return counterbalance one another. That is, the greater the risk, the higher the required return. Accordingly, I do not believe the Commission can or should rely upon either Mr. Parcell's or Mr. Rothschild's recommendations.

RISK FACTORS

Q. BESIDES THE AFOREMENTIONED REQUIRED RISK COMPARISON BETWEEN PUI AND THEIR PROXY GROUPS, WHICH NEITHER MR. PARCELL NOR MR. ROTHSCHILD PRESENTED, IS THERE OTHER EVIDENCE CONCERNING RISK THAT THEY FAILED TO CONSIDER?

A. Yes, sewer utilities face increased risks which Mr. Parcell and Mr. Rothschild did not consider. For example, Moody's credit rating agency stated the amended 2018 change in federal income tax law is "credit negative" for utilities:

> Tax reform is credit negative for sector, but impact varies by company . . . The wide-ranging tax legislation passed by the US Congress on December

> 20, 2017 cut the statutory corporate tax rate to 21% from 35%. The legislation was broadly credit positive for corporate cash flows but for regulated investor-owned utilities, which include electric, gas and water utilities, the effect was the opposite. . . The legislation is credit negative for investor-owned utilities. A lower tax rate will reduce the difference between the amount that utilities collect from rate payers to cover taxes and their payments to tax authorities, reducing cash flow. . . Tax reform is neutral for earnings but negative for cash flow. Utilities collect revenue based on book tax but cash tax is much lower. A lower tax rate lowers revenue, while loss of bonus depreciation increases cash tax. . . Cash flow to debt ratio could decline by 150-250 basis points. We estimate that regulated utilities could experience a decline in the ratio of cash flow from operations pre-working capital to debt (CFO pre-WC/debt) of 150 bps to 250 bps, assuming no corrective action is taken.[6]

Similarly, regarding the recently signed federal income tax law another credit rating agency, Standard & Poor's, has also recently stated:

> One of the not-so-apparent implications of the tax reform legislation is that utility credit metrics will likely experience some strain due to the lower customer rates, revenues and cash flows resulting from the corporate tax rate reduction. Utilities can offset the pressure to their credit metrics in several ways. One approach is to reduce capital expenditures, which, while not increasing earnings or cash flow or rates, would conserve funds and counteract the strain on credit metrics. . . Another approach is that utilities can petition regulators for an increase in their authorized equity returns as a means of offsetting the negative credit ramifications of the new tax law.[7]

Q. IS PUI SIMILAR IN SIZE TO MR. PARCELL'S OR MR. ROTHSCHILD'S PROXY GROUPS?

A. No. My testimony is that the large size difference between PUI and my Comparable Group. Company size is an indicator of business risk and was detailed earlier in my testimony. The finance literature supports the fact that, as the size of a firm decreases, its risk and, hence, its

[6] Moody's Investor Services, *Regulated Utilities - US: Tax Reform is Credit Negative for Sector, But Impact Varies by Company*, January 24, 2018, Page 1.

[7] Standard & Poor's, *Financial Focus: Average Utility Equity Ratio Rises Slightly, Possibly from Tax Reform Fallout*, June 20, 2018, Page 1.

required return increases. Dr. Thomas Zepp presented research on water utilities that support a small firm effect in the utility industry.[8] Moreover, Professor Brigham has indicated that smaller firms have higher capital costs than otherwise similar but larger firms.[9] Standard & Poor's, a credit rating agency, documents that relationship between size and credit rating,

> Company size and diversification often plays [a] role. While we have no minimum size criterion for any given rating level, company size tends to be significantly correlated to rating levels. This is because larger companies often benefit from economies of scale and/or diversification, translating into a stronger competitive position. Small companies are, almost by definition, - more concentrated in terms of product, number of customers, and geography. To the extent that markets and regional economies change, a broader scope of business affords protection.[10] (Underline added.)
>
> While we have no minimum size criterion for any given rating level, size and ratings do end up being correlated, given that size often provides a measure of diversification, and/or affects competitive positioning.[11] (Underline added.)

Further, since size is a recognized and meaningful element of risk, it is appropriate to reflect that risk in a company's cost of equity. Credit rating agencies recognize that size impacts credit rating. The authors Brealey, Myers and Allen discuss the "firm size" and the size premium.[12] Additional support for the use of the size premium for utilities is also found in a 1995 article by M. Annin.[13]

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[8] *See* Zepp (2002), "Utility Stocks and the Size Effect: Revisited", Economics and Finance Quarterly, 43, 578-582.
[9] *See* Fundamentals of Financial Management, 5th Edition, page 623.

[10] *Standard & Poor's,* Corporate Ratings Criteria 2008; pg. 22.

[11] Ibid; pg. 23.

[12] Brealey, Myers and Allen, Principles of Corporate Finance, 10th edition, page 198.

[13] See Annin (1995), "Equity and the Small Stock Effect", Public Utilities Fortnightly, October 15, 1995, at 42-43.

Q. ON PAGE 16 MR. PARCELL REFERENCES AN AUGUST 2015 REPORT BY KIPLINGER'S PERSONAL FINANCE AND A MARCH 2017 REPORT BY VANGUARD NEWS & PERSPECTIVES TO BUTTRESS HIS OPINION THAT INVESTORS' EXPECTATION OF RETURNS ARE LOWER TODAY. DO YOU HAVE ANY COMMENTS CONCERNING THE REFERENCED REPORTS?

A. Yes. To date, since the Kiplinger's Personal Finance report was published in August 2015, the market as measured by the Dow Jones Industrial average ("DJI"), S&P 500 Composite Index ("S&P 500") or the NASDAQ Composite Index ("NASDAQ") has provided annual returns of 12.6% to 18.0% depending on the market index reviewed over the last 4.8 years as shown In Table 1. Further, to date, since the Vanguard News & Perspectives report was published in March 2017, the market has provided annual returns of 11.3% to 19.4% depending on the market index reviewed over the last 3.2 years, also shown in Table 1.

	Actual Annual Returns		
Article	DJI	S&P 500	NASDAQ
Kiplinger's	13.2%	12.6%	18.0%
Vanguard	11.3%	12.1%	19.4%

Table 1

Therefore, the market has provided total annual returns of about 11.3% to 19.4% during the period Mr. Parcell opined that there "has been a decline in investor expectations

of returns." Clearly, investors' return requirements are higher than what Mr. Parcell advocates.

Q. ON PAGE 12 MR. PARCELL CLAIMS "REGULATORY AGENCIES THROUGHOUT THE U.S. HAVE RECOGNIZED THE DECLINE IN CAPITAL COSTS BY AUTHORIZING LOWER ROES FOR REGULATED UTILITIES IN EACH OF THE LAST SEVERAL YEARS." DO YOU AGREE WITH MR. PARCEL?

A. No. In a February 2, 2020 publication by Regulatory Research Associates ("RRA") concerning authorized returns for utility companies its states, "[d]uring 2019, the average return on equity authorized in water utility rate cases trended upward, similar to the natural gas utility group, while the average delivery-only electric utility ROE remained largely flat year-over-year."

Q. ON PAGE 9 MR. ROTHSCHILD REFERENCES A REPORT BY CHARLES SCHWAB AND A REPORT BY J.P. MORGAN TO AS THE BASIS FOR HIS OPINION THAT INVESTORS' EXPECTATION OF RETURNS ARE LOWER TODAY. DO YOU HAVE ANY COMMENTS CONCERNING THE REFERENCED REPORTS?

A. Yes. To date, since the Charles Schwab report was published, the market as measured by the DJI, the S&P 500, or the NASDAQ has provided annual returns of 10.9 to 19.3% depending on the market index reviewed over the last 3.2 years as shown In Table 2. These actual annual returns of 10.9% to 19.3% should be compared to the 6.5% to 7.2% returns cited in the Charles Schwab report relied on by Mr. Rothschild. Further, to date, since the J.P.

Morgan forecast for 2019 was published, the market has provided annual returns of 14.4% to 34.1% depending on the market index reviewed over the last 1.4 years, also shown in Table 2. These actual annual returns of 14.4% to 34.1% should be compared to the 5.25% to 8.75% cited in the J.P. Morgan report relied on by Mr. Rothschild.

	Actual Annual Returns		
Article	DJI	S&P 500	NASDAQ
Schwab	10.9%	11.8%	19.3%
JP Morgan	14.4%	21.2%	34.1%

Table 2

Therefore, the market has provided total annual returns of between 10.9% to 34.1% during the period Mr. Rothschild stated that there has been a decline in investor expectations of returns. Clearly, investors' return requirements are higher than what Mr. Rothschild advocates.

Q. MR. ROTHSCHILD REFERENCES THE PREVIOUSLY DISCUSSED REPORTS BY CHARLES SCHWAB AND J.P. MORGAN TO SUPPORT HIS OPINION THAT INVESTORS' EXPECTATION OF RETURNS ARE LOWER TODAY. DOES HE CONTRADICT THIS NOTION ELSEWHERE IN HIS TESTIMONY?

A. Yes. On page 18 Mr. Rothschild states:

> The second development, as shown in Chart 5 below, is that **the yield curve has steepened significantly** as a result of the Coronavirus-induced financial crisis. Before the crisis, the yield on the 1-month treasury bill was about

1.5%, increasing to less than 2.5% for the 30-year Treasury Bond, which is less than double. On the other hand, as of April 1, 2020, the yield curve increased from nearly 0% for the 1-month treasury bill to about 1.25% for the 30-year U.S Treasury Bond. **A steep yield curve indicates investors expect economic conditions to improve** because, with expected profitable investment opportunities, **they require a significant premium in order to commit their money for long periods of time**. (Emphasis added)

STAFF'S AND DCA'S RECOMMENDED COST OF EQUITY

Q. WHAT MARKET VALUE DCF ESTIMATE DO MR. PARCELL AND MR. ROTHSCHILD RECOMMEND FOR PUI?

A. Mr. Parcell recommends a market value DCF of 9.1% and Mr. Rothschild recommends a market value DCF range of 5.4% to 8.3% (an average of 6.9%) for their proxy groups which I believe are below the zone of reasonableness.

Q. WHY IS THERE SUCH A LARGE DIFFERENCE BETWEEN MR. PARCELL AND MR. ROTHSCHILD MARKET VALUE DCF ESTIMATES?

A. The **220-basis point difference** between Mr. Parcell's market value DCF of 9.1% and Mr. Rothschild market value DCF of 6.9% is a result of Mr. Rothschild's reliance upon internal growth rates while Mr. Parcell used primarily published projected growth in earnings per share. I believe Mr. Rothschild improperly relied upon growth rates that he calculated. Mr. Rothschild subjectively ignored the investor influencing growth rates of security analysts and instead, calculated his own growth rates based on internal growth. Internal growth measures growth in book value, not stock price. Growth in book value is meaningless given today's relatively **high market value** multiples and therefore, internal growth is not a good proxy for investors' growth expectations.

Q. DO YOU HAVE ANY OTHER COMMENTS REGARDING MR. ROTHSCHILD'S DCF MODEL?

A. Yes. Mr. Rothschild's sustainable growth rate is calculated using a projected return on equity of 10.0%.[14] Mr. Rothschild's average projected ROE of 10.0% is **310-basis points higher** than Mr. Rothschild's average recommended DCF of 6.9% and highlights the inadequacy of Mr. Rothschild's recommendation.[15]

Published projected EPS growth rates are used primarily by investors. Further, academic studies[16] verify the superiority of analysts' EPS growth forecasts over derived growth rates in predicting stock prices. Mr. Rothschild developed unrealistically low DCFs through the use of a low growth estimate. The market-required cost of equity represents what the market will pay for a stock based on investors' expectations of expected future growth. Investors' expectations of expected future growth are not based upon Mr. Rothschild's unique growth rate, they are based on investors' expectations of expected future growth.

For this reason, analysts' projections of future growth prospects for water utilities are required. Analysts' EPS growth projections are not required because they will necessarily prove correct. Rather, analysts' EPS projections of future growth prospects are required because real investors rely on them more than any other source. It is irrelevant whether

[14] See Exhibit ALR-4 page 1.

[15] Mr. Rothschild's highest DCF cost rate of 8.3% is 170-basis points below his average projected ROE of 10.0%.

[16] Gordon, David, A., Gordon, Myron, J., and Gould, Lawrence, I.A Choice Among Methods of Estimating Share Yield, The Journal of Portfolio Management, 50-55, Spring 1989.

analysts are inherently over-or-under optimistic or pessimistic. The analysts' forecasts are relied upon by investors when they price utility stocks.

Even if Mr. Rothschild's judgments concerning future growth were superior to the analysts' forecasts, there still would be no justification for using Mr. Rothschild's unique growth rate in a DCF formula because investors that price stocks are totally unaware of Mr. Rothschild's analysis (even if hypothetically it were better). Instead, investors rely upon analysts' forecasts, which are widely available to and used by investors.

Q. IS THERE A DIFFERENCE BETWEEN EARNED RETURNS, OR ACCOUNTING RETURNS AND THE ROE TO BE DETERMINED IN THIS CASE?

A. No, not really. I agree there is a distinction between a market return and an accounting return. The ROE that the Commission will determine in this case will become PUI's accounting ROE benchmark by which under-earning and over-earning will be measured. If Mr. Rothschild's proxy group is earning an accounting return of 10.0% while PUI earns only 6.9%, it places PUI at a competitive disadvantage in the competition to attract capital.

Q. DO YOU HAVE ANY COMMENTS CONCERNING MR. PARCELL'S RECOMMENDED GROWTH RATE USED IN HIS DCF RECOMMENDATION.

A. Yes. Mr. Parcell's DCF is the result of five different types of growth rates.[17] Four of Mr. Parcell's types of growth rates came from Value Line. The fifth growth rate is an analysts' consensus EPS growth projection. Accordingly, only 20% of the types of growth used by Mr. Parcell are consensus growth projections of EPS growth.[18]

[17] See Exhibit DCP-2, Schedule 6, page 4.

[18] Seventy five percent of the growth rates incorporated into my DCF are consensus EPS growth projections.

Q. DO CURRENT MARKET CONDITIONS IMPACT MR. PARCELL'S AND MR. ROTHSCHILD'S COST OF EQUITY METHODOLOGIES MORE SO CURRENTLY THAN IN PREVIOUS PERIODS?

A. Yes. The basic proposition of financial theory regarding the economic value of a company is based on market value. That is, a company's value is based on its **market value** weighted average cost of capital.[19] The American Society of Appraisers, ASA Business Valuation Standards, 2009, and the National Association of Certified Valuation Analysts, Professional Standards, 2007, use the same definition:

> Weighted Average Cost of Capital (WACC). The cost of capital (discount rate) determined by the weighted average, **at market values**, of the cost of all financing sources in the business enterprise's capital structure. (Emphasis added)

Accordingly, the market value derived cost rate reflects the financial risk or leverage associated with **capitalization ratios based on market value**, not book value.

As shown in Table 3, there is a large difference in the market capitalization ratios and the book capitalization for Mr. Parcell's and Mr. Rothschild's proxy groups. This current difference in market values and book values results in debt/equity ratios based on **market value of 20%/80%** (debt/equity) versus 48/52% (debt/equity) based on book value for Mr. Parcell's proxy group and debt/equity ratios based on **market value of 23%/77%** (debt/equity) verses 48%/52% (debt/equity) based on book value for Mr. Rothschild's proxy group as shown on Table 3.

[19] Other examples, see http://www.investinganswers.com/financial-dictionary/financial-statement-analysis/weighted-average-cost-capital-wacc-2905. Also see http://www.wallstreetmojo.com/weighted-average-cost-capital-wacc/ , or http://accountingexplained.com/misc/corporate-finance/wacc .

Differences in Book Values and Market Values for
Staff's and DCA's Proxy Groups

	Recent Book Value Capitalization Ratios 12/31/2019	**Recent Market Value Capitalization Ratios**
Mr. Parcell's Proxy Group		
Long Term Debt	48.4 %	**19.9 %**
Preferred Stock	0.1	**0.0**
Common Equity	51.5	**80.1**
Total	100.0 %	**100.0 %**
Mr. Rothschild's Proxy Group		
Long Term Debt	49.3 %	**23.3 %**
Preferred Stock	0.1	**0.0**
Common Equity	50.6	**76.7**
Total	100.0 %	**100.0 %**

Table 3

The larger the difference between market values and book values the less reliable the models' results are because **the models provide an estimate of the cost of capital of market value**, not book value.

Financial theory concludes capital structure and firm value are related. Since capital structure and firm value are related, a leverage adjustment (Hamada adjustment) is required when a cost of common equity model is based on market value and if its results are then applied to book value. As explained previously, the market value derived cost rate reflects

the financial risk or leverage associated with **capitalization ratios based on market value**, not book value. The authors Brealey, Myers and Allen provide a similar definition of the cost of capital being based on market capitalization, not book value,

> The values of debt and equity add up to overall firm value (D + E = V) and firm value V equals asset value. **These figures are all market values, not book (accounting) values**. The market value of equity is often much larger than the book value, so the market debt ratio D/V is often much lower than a debt ratio computed from the book balance sheet.[20]

The work of Modigliani and Miller concludes that the market value of any firm is independent of its capital structure and this is precisely the reason why the leverage adjustment (Hamada adjustment) is appropriate. The only way for the market value of a firm to remain independent of its capital structure is if the capital cost rates change to offset changes in the capital structure. If the capital cost rates do not change to offset changes in the capital structure, then the value of the firm will change. Clearly a leverage adjustment (Hamada adjustment) is required when a cost of common equity model is based on **market value** and if its results are then applied to **book value** because the capital structure is changed from **market value** capitalization to **book value** capitalization.

Referring to Table 3, Mr. Parcell's and Mr. Rothschild's proxy groups' cost of capital is based on debt/equity ratios based on **market value of about 20%/80%** (debt/equity). Therefore, Mr. Parcell's and Mr. Rothschild's market value equity cost rates reflect an 80% equity ratio. That is not just my opinion, but it is a cornerstone of financial theory. Mr. Parcell's and Mr. Rothschild's market value DCF cost rates of 9.1% and 6.9%, respectively, reflect an 80% equity ratio and yet they recommend their 9.1% and 6.9% cost of equity be

applied to their proxy groups' approximate 52% equity ratio based on book value. Even if their 9.1% and 6.9% cost of equity were appropriate for an 80% equity ratio, it cannot simultaneously be appropriate for a 52% equity ratio without violation of Modigliani and Miller's precept.

Q. WHAT MARKET VALUE CAPM ESTIMATE DO MR. PARCELL AND MR. ROTHSCHILD RECOMMEND FOR PUI?

A. Mr. Parcell recommends a market value CAPM of 6.3% and Mr. Rothschild recommends a market value CAPM range of 7.9% to 10.7% (an average of 9.3%) for their proxy groups which I believe are below the zone of reasonableness.

Q. WHY IS THERE SUCH A LARGE DIFFERENCE BETWEEN MR. PARCELL'S AND MR. ROTHSCHILD'S MARKET VALUE CAPM ESTIMATES?

A. The **300-basis point difference** between Mr. Rothschild's market value CAPM of 9.3% and Mr. Parcell's market value CAPM of 6.3% is a result of Mr. Parcell's reliance upon incorrect market returns which produces a CAPM below the zone of reasonableness.

Q. WHY IS HIS RECOMMENDED CAPM BELOW A ZONE OF REASONABLENESS?

A. Mr. Parcell's CAPM calculation reflects improper inputs. For example, Mr. Parcell's market premium is based on the average of two market returns and an accounting return. That is, one-third of Mr. Parcell's market premium is based on his estimate of the spread in the S&P 500 index return on book value, or ROE, verses yields on T-Bonds. The actual earned ROE for the S&P 500 index is not a capital cost rate, rather it is an accounting measure which fluctuates widely.

[20] (Emphasis added) Brealey, Myers and Allen, Principles of Corporate Finance, 10th edition, page 216.

I analyzed Mr. Parcell's S&P 500 index return on book value, or ROE, versus yields on T-Bonds (Exhibit DCP-2, Schedule 7) and found that there is an inverse relationship between his risk premium and the level of interest rate. That is, when interest rates are low, the premium is high and when interest rates are high, the premium is low.

Specifically, Mr. Parcell lists 41 years of data (1978-2018) for the S&P 500 index risk premium and T-Bond yields (interest rates) on Exhibit DCP-2, Schedule 7. I sorted his data based upon interest rates from lowest to highest, separated into four equal periods of 10 years each and found the following relationship:

1. The risk premium averaged 10.56% when interest rates were between 2.30% and 4.25%;
2. The risk premium averaged 7.48% when interest rates were between 4.45% and 5.83%;
3. The risk premium averaged 7.89% when interest rates were between 6.18% and 8.19%;
4. The risk premium averaged 3.48% when interest rates were between 8.22% and 13.50%.

Mr. Parcell looked at 41 years of data which had an average interest rate of 6.48% and an average risk premium of 7.26% and he concluded a risk premium of 7.26% was appropriate. However, today's T-Bond interest rate is 2.12% according to Mr. Parcell (Exhibit DCP-2, Schedule 8) which is much lower than the average interest rate of 6.48% relied upon by Mr. Parcell.

As shown above, during the period 1978-2018, the 10 years with the lowest interest rates had an average interest rate of 3.06%, reflecting a range of interest rates from 2.30% to 4.25%, and had an average risk premium of 10.56%. This period resembles Mr. Parcell's current interest rate environment of 2.12%. Accordingly, if Mr. Parcell's methodology

discussed above is appropriate to use he should have used a 10.56% risk premium, not 7.26%, because the current interest rate environment is 2.12%, according to Mr. Parcell.

The other two-thirds of Mr. Parcell's market premium is based on his estimate of an actual market return for the S&P 500 reported in the SBBI Yearbook publication. However, Mr. Parcell used incorrect information in determining the SBBI market premium.

Q. WHAT IS WONG WITH THE SBBI MARKET PREMIUM CONTAINED IN MR. PARCELL'S CAPM?

A. Mr. Parcell's CAPM relies upon the SBBI market premium found in their annual Yearbook publication. SBBI devotes a significant amount of their annual Yearbook publication to the discussion of the development of the market premium to be used in CAPM. Mr. Parcell incorrectly relied upon a total market return for bonds in determining his market premium. SBBI (2019) states the appropriate development of the equity market premium is estimated based on the **arithmetic** mean total return of the S&P 500 minus the **arithmetic** mean **income return component** of 20-year government bonds from 1926-2018.

Mr. Parcell's second flaw is the incorrect use of a geometric mean return instead of the appropriate arithmetic mean. The arithmetic mean best measures the expectancy of a single year. The geometric mean contains a downward bias in return rates in that as long as there is variability among return rates in any given series, the geometric mean will appear smaller with the existence of a majority of positive returns, while it will appear larger in absolute terms (+/-) with the existence of a majority of negative returns.

The geometric mean return is a measure of the accumulation of wealth. It is backward looking and only explains how you got from a beginning value to an ending value.

It does not explain what occurred between the two points. The arithmetic mean best measures the expected or likely return in any single year. Cost of capital is not related to measurement of the accumulation of wealth. Cost of capital is the estimation of the expected return in any single year.

The expected rate of return is "the rate of return expected to be realized from an investment; the mean value of the probability distribution of possible results."[21] The arithmetic mean is the mean value of a probability distribution. Moreover, the expected equity risk premium should always be calculated using the arithmetic mean.[22]

Q. WHAT ERRORS AND/OR OMISSIONS ARE CONTAINED IN MR. PARCELL'S CAPM?

A. SBBI devotes an entire chapter of their annual Yearbook publication to the discussion of size premiums and the importance of including size premiums when calculating a CAPM. Mr. Parcell's CAPM does not include SBBI's required size premium adjustment. The size premium reflects the risks associated with Mr. Parcell's proxy group's small size and its impact on the determination of their beta. This adjustment is necessary because beta (systematic risk) does not capture or reflect the proxy group's small size. According to Brealey, Myers, and Allen, "the relationship among stock returns and firm size and book-to-market ratio has been well documented."[23] Brealey, Myers, and Allen also state, on page

[21] Eugene F. Brigham, Fundamentals of Financial Management, Fifth Edition, The Dryden Press, 1989, p. 106.

[22] 2017 SBBI Yearbook, Stocks, Bonds, Bills and Inflation. U.S. Capital Markets Performance by Asset Class 1926-2016, Duff and Phelps. Stocks, section 7 pg. 16.

[23] Brealey, Myers and Allen, Principles of Corporate Finance, 10th edition, page 198.

202, that "between 1926 and 2008 the difference between the annual returns on small and large capitalization stocks averaged 3.6%" which should be included in Mr. Parcell's CAPM.

Investors prefer liquidity to lack of liquidity. Accordingly, a share in a business is worth more if it is easily marketable or, conversely, worth less if it is not. Privately held utilities and limited liability companies, such as PUI, are worth less than publicly traded water utilities. Further, publicly traded water utilities are not as marketable as the large companies which comprise the S&P 500. The size premium used in the CAPM accounts for some of these differences.

Q. DO YOU AGREE WITH MR. ROTHSCHILD'S CAPM METHODOLOGY?

A. No. The three areas of disagreement I have with Mr. Rothschild's CAPM relate to his risk-free rate, beta and the market risk premium. Mr. Rothschild's risk-free rate is based on the short-term (3-month) treasury bill. Financial theory indicates the term matching of the risk-free rate should be based on the life of the asset, not the time horizon of the investor. In this case, PUI's assets have a much longer life than the 3-months that results from using the 3-month treasury bill. I also note that the yield on the 30-year treasury bond used by Mr. Rothschild is 46-basis points higher today than when Mr. Rothschild prepared his CAPM.

Another area of disagreement I have with Mr. Rothschild's CAPM is he calculated his own unique betas and did not use published betas. The market required cost of equity represents what the market will pay for a stock based on investors' expectations and assessment of risk (beta). Investors' expectations and assessment of risk (beta) are not based upon Mr. Rothschild's unique betas.

For this reason, published betas for water utilities which also provide sewer service are required. Published betas are not required because they will necessarily prove correct. Rather, published betas are required because real investors rely on them. Even if Mr. Rothschild's unique betas were hypothetically superior to published betas, there still would be no justification for using Mr. Rothschild's unique betas in a CAPM formula because investors that price stocks are totally unaware of Mr. Rothschild's unique betas. Instead, investors rely upon published betas, which are widely available to and used by investors.

The last area of disagreement I have with Mr. Rothschild's CAPM is he did not reflect the required CAPM size premium. The size premium reflects the risks associated with Mr. Rothschild's proxy group's small size and its impact on the determination of their beta. This adjustment is necessary because beta (systematic risk) does not capture or reflect the proxy group's small size as explained previously regarding Mr. Parcell's testimony. Similarly, a size premium should be included in Mr. Rothschild's CAPM.

Q. DO YOU HAVE ANY OTHER COMMENTS REGARDING THE MARKET VALUE CAPM ESTIMATES OF MR. PARCELL AND MR. ROTHSCHILD?

A. Yes. The market value derived CAPM cost rate reflects the financial risk or leverage associated with **capitalization ratios based on market value**, not book value. As explained previously, there is a large difference in the market capitalization ratios and the book capitalization for Mr. Parcell's and Mr. Rothschild's proxy groups. This difference in market values and book values results in debt/equity ratios based on **market value of 20%/80%** (debt/equity) versus the roughly 48%/52% (debt/equity) based on book value for Mr. Parcell's and Mr. Rothschild's proxy groups. The larger the difference between market

values and book values the less reliable the models' results are because **the models provide an estimate of the cost of capital of market value**, not book value.

Q. PLEASE EXPLAIN MR. PARCELL'S COMPARABLE EARNINGS ANALYSIS.

A. Mr. Parcell looks at actual earned accounting ROEs for the S&P 500 and his proxy group and their respective market-to-book ratios ("M/Bs") as a means of estimating a common equity cost rate. Based on his review, Mr. Parcell concluded a 10.0% common equity cost rate is reasonable for PUI based on his comparable earnings analysis.

Q. IS THERE ANY SIGNIFICANCE TO MR. PARCELL'S PROXY GROUP'S ACCOUNTING ROE AND THEIR M/B AS AN INDICATION FOR THE COST OF CAPITAL FOR PUI?

A. No. Mr. Parcell looked at accounting ROEs and M/Bs for his proxy group as a means of estimating a common equity cost rate. I reviewed Mr. Parcell's data for the most recent year, 2018, and found Mr. Parcell's proxy group had an average ROE of 11.0% during this period.[24] Further, Mr. Parcell's proxy group is projected to have a ROE of 11.6% in 2020 and a 13.3% ROE for 2022-2024. This information shows the problem with Mr. Parcell's recommendation because if Mr. Parcell's proxy group is earning an accounting return of 11.6%-13.3%% while PUI earns only 10.0%, it places PUI at a competitive disadvantage in attracting capital.

Q. MR. PARCELL USED DCF, CAPM AND COMPARABLE EARNINGS TO DEVELOP HIS RECOMMENDED 9.55% COST OF EQUITY FOR PUI WHILE MR. ROTHSCHILD USED DCF AND CAPM TO DEVELOP HIS RECOMMENDED

[24] See Exhibit DCP-2, Schedule 9, page 1.

8.63% COST OF EQUITY FOR PUI. DO YOU HAVE ANY COMMENTS REGARDING THEIR RECOMMENDED COMMON EQUITY COST RATE FOR PUI?

A. Yes. I previously pointed out that Mr. Parcell's proxy group earned a return on common equity of 11.0% in 2018 and are projected to earn a return on common equity of 11.6% in 2020 and a 13.3% during 2022-2024. If the Proxy Group is earning an accounting return of 11.0% or 11.6% to 13.3% while PUI earns only 9.55%, it places PUI at a competitive disadvantage in the competition to attract capital.

Similarly, Mr. Rothschild's proxy group is projected to earn a return on common equity of 10.6% in 2020 and a 12.5% during 2022-2024. If the Proxy Group is earning an accounting return of 10.6% to 12.5% while PUI earns only 8.63%, it places PUI at a competitive disadvantage in the competition to attract capital.

RESPONSE TO CRITICISMS OF MR. WALKER'S TESTIMONY

Q. ON PAGE 45 MR. PARCELL CLAIMS YOUR RECOMMENDED GROWTH RATE OF 7.4% USED IN YOUR DCF IS NOT SUPPORTED BY YOUR DATA. IS MR. PARCELL CORRECT?

A. No. As explained in my direct testimony, my recommended growth rate of 7.4% used in my DCF is based on the average projected EPS growth rate. I relied on four sources of information for projected EPS growth rate and three of the four sources are consensus growth projections of EPS growth. The average consensus growth rate from each of my three consensus sources are 7.4%, 7.4%, 6.6% and Value Line projected EPS growth averaged 8.1%. The average of these four sources is 7.4%.

Q. ON PAGES 45 AND 46 MR. PARCELL STATES HIS UNDERSTANDING OF YOUR "LEVERAGE ADJUSTMENT." IS HIS PORTRAYAL OF THIS ADJUSTMENT ACCURATE?

A. No. I explain the reason this adjustment should be used in my direct testimony. Further, previously in my rebuttal testimony I explain in detail that financial theory concludes capital structure and firm value are related. Since capital structure and firm value are related, a leverage adjustment (Hamada adjustment) is required when a cost of common equity model is based on **market value** and if its results are then applied to **book value**. As explained previously, the market value derived cost rate reflects the financial risk or leverage associated with **capitalization ratios based on market value**, not book value.

Q. ON PAGES 47 MR. PARCELL STATES THAT YOU DID NOT PROVIDE A JUSTIFICATION FOR THE MARKET RISK PREMIUM COMPONENT USED IN YOUR CAPM. IS MR. PARCELL CORRECT?

A. No. The market risk premium component used in my CAPM was explained on pages 47 and 48 of my direct testimony and also on Schedule 17 of my supporting exhibit. As stated, "The Ibbotson Associates' market premium may be on the low side reflective of the higher interest rate environment found during their study (*i.e.*, 5.0%). The Value Line market premium reflects the Federal Reserve's current artificial interest rate levels while the Ibbotson Associates' market premiums reflect a higher interest rate environment."

Q. ON PAGE 48 MR. PARCELL STATES HIS BELIEF THAT A RISK ADJUSTMENT FOR PUI'S SMALL SIZE WOULD BE INCORRECT AS IT IGNORES THE

COMPANY'S STATUS AS A "SUBSIDIARY OF A LARGER COMPANY." DID MR. PARCELL PROVIDE ANY EVIDENCE SUPPORTING THIS VIEW?

A. No, he did not provide any support for his stated view. The authors Brealey, Myers and Allen hold a view that is opposite to Mr. Parcell's opinion, stating that "the true cost of capital depends on project risk, not on the company undertaking the project."[25] From the Brealey, Myers and Allen point of view, PUI is the "project risk" and its investors would be "the company undertaking the project." Accordingly, from investors' perspective, investment risk is the use of the funds (e.g., PUI), not the source of those funds. Therefore, PUI's small size is relevant when determining their cost of capital. Further, in my direct testimony on page 28 I summarize the risk differences between PUI and my Comparison Group. The documented risk differences between PUI and my Comparison Group is due to a number of factors, summarized on page 28, besides just their size.

Q. ON PAGE 70, MR. ROTHSCHILD STATES, "HE INCREASES HIS RISK PREMIUM FROM 4.7% TO 5.9% BASED ON HIS FALSE CLAIM THAT RISK PREMIUMS AND INTEREST RATES ARE INVERSELY CORRELATED." ARE RISK PREMIUMS AND INTEREST RATES INVERSELY RELATED?

A. Yes. Mr. Rothschild's assertion is provably false. Pages 52 and 54 of my direct testimony proves and measures the negative relationship between interest rate levels and the resulting risk premium. Conversely, Mr. Rothschild's measurement of the default spread (page 71) between Baa rate corporate bond yields and 10-year treasuries is not an equity risk premium, it's a credit default premium or default spread.

[25] Brealey, Myers and Allen, Principles of Corporate Finance, 10th edition, page 215.

Q. ON PAGE 70, MR. ROTHSCHILD CLAIMS IBBOTSON ASSOCIATES STATES, "INVESTORS ARE CONCERNED ABOUT GEOMETRIC MEAN RETURNS" VERSUS ARITHMETIC MEAN RETURNS. IS MR. ROTHSCHILD'S CLAIM CORRECT?

A. No. Ibbotson Associates devotes a significant amount of their annual Yearbook publications to the discussion of the development of the market premium to be used in CAPM. Ibbotson Associates states the appropriate development of the equity market premium is estimated based on the **arithmetic** mean total return of the S&P 500 minus the **arithmetic** mean **income return component** of 20-year government bonds from 1926-2018.

Mr. Rothschild incorrectly represents Ibbotson Associates statements regarding the use of the geometric mean return instead of the appropriate arithmetic mean return. The arithmetic mean best measures the expectancy of a single year. The geometric mean contains a downward bias in return rates in that as long as there is variability among return rates in any given series, the geometric mean will appear smaller with the existence of a majority of positive returns, while it will appear larger in absolute terms (+/-) with the existence of a majority of negative returns.

The geometric mean return is a measure of the accumulation of wealth. It is backward looking and only explains how you got from a beginning value to an ending value. It does not explain what occurred between the two points. The arithmetic mean best measures the expected or likely return in any single year. Cost of capital is not related to the measurement of the accumulation of wealth. Cost of capital is the estimation of the expected return in any single year.

The expected rate of return is "the rate of return expected to be realized from an investment; the mean value of the probability distribution of possible results."[26] The arithmetic mean is the mean value of a probability distribution. Moreover, the expected equity risk premium should always be calculated using the arithmetic mean.[27]

Q. ON PAGE 75, MR. ROTHSCHILD IMPLIES THAT YOU ATTRIBUTE PUI'S GREATER RISK ONLY DUE TO ITS SMALL SIZE. DO YOU HAVE ANY COMMENTS?

A. Yes. PUI's provable greater risk is not only due to its size but to lower returns, lower cash flow, lower credit profile and the other factors summarized in Table 5 of my direct testimony.

Q. DOES THIS CONCLUDE YOUR REBUTTAL TESTIMONY?

A. Yes.

[26] Eugene F. Brigham, Fundamentals of Financial Management, Fifth Edition, The Dryden Press, 1989, p. 106.

[27] Stocks, Bonds, Bills & Inflation: 1997 Yearbook, Ibbotson Associates, 1997, p.154.

CITY OF COLUMBIA, SOUTH CAROLINA
ENTERPRISE FUNDS

COMBINING BALANCE SHEET (Continued)

June 30, 1998
(With Comparative Totals for June 30, 1997)

	Water/Sewer Facilities Fund	Parking Facilities Fund	Transportation Operating Fund	Redevelopment Programs Fund	Totals 1998	Totals 1997
LIABILITIES AND FUND EQUITY						
Current liabilities:						
Accounts payable	$ 1,451,076	$ 5,180	21,957	$ 50,320	$ 1,528,533	$ 2,290,830
Accrued salaries and benefits	360,947	22,245	0	0	383,192	323,856
Accrued vacation pay	766,561	51,795	0	0	818,356	769,776
Retainage payable	591,468	0	0	7,413	598,881	902,748
Due to other funds	35,103	2,805	32,000	321,200	391,108	32,846
Due to component units	0	0	0	22,409	22,409	0
Note payable	170,302	0	0	135,000	305,302	290,302
Total current liabilities payable from current assets	3,375,457	82,025	53,957	536,342	4,047,781	4,610,358
Current liabilities payable from restricted assets:						
Accrued interest payable	2,331,250	78,931	0	66,878	2,477,059	2,721,531
General obligation bonds payable	0	240,000	0	0	240,000	240,000
Revenue bonds payable	9,595,000	310,000	0	0	9,905,000	9,385,000
Customer deposits	224,191	1,006	0	0	225,197	220,016
Total current liabilities payable from restricted assets	12,150,441	629,937	0	66,878	12,847,256	12,566,547
Long-term liabilities:						
Note payable	977,693	0	0	2,205,000	3,182,693	3,287,995
General obligation bonds payable	0	1,526,141	0	0	1,526,141	1,765,000
Revenue bonds payable, net	113,931,180	6,603,113	0	0	120,534,293	128,740,861
Total long-term liabilities	114,908,873	8,129,254	0	2,205,000	125,243,127	133,793,856
Total liabilities	130,434,771	8,841,216	53,957	2,808,220	142,138,164	150,970,761
Fund equity:						
Contributed capital:						
From other governmental entities	23,359,490	584,857	1,443,426	0	25,387,773	25,857,800
From subdividers	60,418,645	0	0	0	60,418,645	57,786,683
From impact fees	9,068,567	0	0	0	9,068,567	8,036,819
Total contributed capital, net	92,846,702	584,857	1,443,426	0	94,874,985	91,681,302
Retained earnings	161,025,253	10,409,056	27,328	13,191,312	184,652,949	170,262,706
Total fund equity:	253,871,955	10,993,913	1,470,754	13,191,312	279,527,934	261,944,008
Total liabilities and fund equity	$ 384,306,726	$ 19,835,129	1,524,711	$ 15,999,532	$ 421,666,098	$ 412,914,769

CITY OF COLUMBIA, SOUTH CAROLINA
ENTERPRISE FUNDS

COMBINING STATEMENT OF REVENUES, EXPENSES AND CHANGES IN FUND EQUITY

Year Ended June 30, 1998
(With Comparative Totals for the Year Ended June 30, 1997)

	Water/Sewer Facilities Fund	Parking Facilities Fund	Transportation Operating Fund	Redevelopment Programs Fund	Totals 1998	Totals 1997
Operating revenues:						
Charges for services	$ 54,885,806	$ 3,162,653	$ 33,517	$ 0	$ 58,081,976	$ 55,663,962
Other operating revenue	45,019	1,209,649	133,190	5,280	1,393,138	1,827,310
Total operating revenue	54,930,825	4,372,302	166,707	5,280	59,475,114	57,491,272
Operating expenses:						
Personal services	10,985,974	955,774	0	0	11,941,748	11,466,499
Materials and supplies	3,075,417	102,485	6,875	0	3,184,777	3,156,437
Other services and charges	2,591,857	205,391	213,383	245,640	3,256,271	3,122,831
Heat, light and power	3,051,520	134,026	11,989	0	3,197,535	3,206,618
Indirect costs	2,920,000	0	0	0	2,920,000	2,835,000
Depreciation	10,879,246	235,034	0	0	11,114,280	8,609,961
Bad debt expense	618,253	144,046	0	85,874	848,173	939,928
Total operating expenses	34,122,267	1,776,756	232,247	331,514	36,462,784	33,337,274
Operating income (loss)	20,808,558	2,595,546	(65,540)	(326,234)	23,012,330	24,153,998
Nonoperating revenues (expenses):						
Interest income	2,314,415	312,734	29	590,870	3,218,048	4,621,949
Gain (loss) from sale of assets	108,437	0	0	(9,597)	98,840	80,895
Interest expense	(7,596,906)	(489,608)	0	(229,131)	(8,315,645)	(8,693,306)
Amortization of bond costs	(226,928)	(51,831)	0	0	(278,759)	(285,326)
Total nonoperating revenues (expenses)	(5,400,982)	(228,705)	29	352,142	(5,277,516)	(4,275,788)
Income (loss) before operating transfers	15,407,576	2,366,841	(65,511)	25,908	17,734,814	19,878,210
Operating transfers:						
Operating transfers in	0	0	87,134	1,446,062	1,533,196	1,870,132
Operating transfers (out)	(4,988,400)	(1,750,000)	0	(203,737)	(6,942,137)	(6,758,643)
Operating transfers (out) - component unit	(135,000)	0	0	0	(135,000)	(125,000)
Total operating transfers in (out)	(5,123,400)	(1,750,000)	87,134	1,242,325	(5,543,941)	(5,013,511)
Net income	10,284,176	616,841	21,623	1,268,233	12,190,873	14,864,699
Add, depreciation on contributed assets	2,199,370	0	0	0	2,199,370	2,150,160
Increase in retained earnings	12,483,546	616,841	21,623	1,268,233	14,390,243	17,014,859
Beginning retained earnings	148,541,707	9,792,215	5,705	11,923,079	170,262,706	153,247,847
Retained earnings, end of year	161,025,253	10,409,056	27,328	13,191,312	184,652,949	170,262,706
Beginning contributions	91,096,445	584,857	0	0	91,681,302	90,202,339
Capital contributions	3,949,627	0	1,443,426	0	5,393,053	3,629,123
Depreciation on contributed capital	(2,199,370)	0	0	0	(2,199,370)	(2,150,160)
Contributions, end of year	92,846,702	584,857	1,443,426	0	94,874,985	91,681,302
Total equity, end of year	$ 253,871,955	$ 10,993,913	$ 1,470,754	$ 13,191,312	$ 279,527,934	$ 261,944,008